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R. P. Strong

CIRCULAR OF THE
SCHOOL FOR
HEALTH OFFICERS

VOLUME I | DECEMBER, 1913 | NUMBER 2

HARVARD UNIVERSITY AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CATALOGUE

AND

ANNOUNCEMENT

1913-14

PUBLISHED BY THE
SCHOOL FOR HEALTH OFFICERS
240 LONGWOOD AVENUE, BOSTON, MASS.
1913

SCHOOL FOR HEALTH OFFICERS

OF

HARVARD UNIVERSITY AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CATALOGUE

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1914

1913

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CONTENTS

	PAGE
Calendar	4
Organization	5
General Information	6
Requirements for Admission	7
Admission of Women	8
Application and Registration	8
Schedule of Courses	8
Courses in Tropical Medicine	9
Certificate	9
Fees	9
Staff of Instructors	11
Groups of Courses	14
Description of Courses	19
Students	43

CALENDAR

1913-1914

Feb. 2, Monday . . . Second Term begins. Payment of second instalment of the tuition fee is required on or before this date.

May 27, Wednesday . . Final Examinations begin.

June 11, Thursday . . . Award of Certificates.

June 22, Monday . . . Summer session of Harvard School of Engineering begins at Cambridge.

RECESSES AND HOLIDAYS

1914

Feb. 2–7, Monday to Saturday . . M.I.T. Recess.

Feb. 23, Monday . . . . . Washington's Birthday.

Apr. 16–20, Thursday to Monday . . M.I.T. Recess.

Apr. 19–25, Sunday to Saturday . . Harvard Recess.

May 30, Saturday . . . . . Memorial Day.

Oct. 12, Monday . . . . . Columbus Day.

Nov. 26, Thursday . . . . . Thanksgiving Day.

Dec. 22–Jan. 3, Tuesday to Sunday . Harvard Christmas Recess.

Dec. 24–30, Thursday to Wednesday . M.I.T. Christmas Recess.

1914-1915

Sept. 26, Saturday . . . Last Day for Registration and Presentation of Schedule of Courses for Approval.

Sept. 28, Monday . . . First Term begins. Payment of first instalment of the tuition fee is required on or before this date.

THE SCHOOL FOR HEALTH OFFICERS

ABBOTT LAWRENCE LOWELL, LL.D., PH.D., *President of Harvard University.*

RICHARD C. MACLAURIN, LL.D., Sc.D., *President of the Massachusetts Institute of Technology.*

The names of the Administrative Officers and Governing Boards of Harvard University will be found in the Official Register of Harvard University; and of the Administrative Officers and Governing Boards of the Massachusetts Institute of Technology, in the Official Bulletin of the Massachusetts Institute of Technology.

MILTON J. ROSENAU, M.D., *Director.*

ADMINISTRATIVE BOARD

WILLIAM T. SEDGWICK, Sc.D., *Chairman.*
MILTON J. ROSENAU, M.D.
GEORGE C. WHIPPLE, S.B., *Secretary.*

OFFICE HOURS

The office of the School for Health Officers is at the office of the Director, Professor ROSENAU, Harvard Medical School, Bldg. E, Room 238, 240 Longwood Avenue, Boston, where the business of the School is conducted.

The office of the Chairman, Professor SEDGWICK, is at the Henry L. Pierce Building, Massachusetts Institute of Technology, 30 Trinity Place, Boston.

The office of the Secretary, Professor WHIPPLE, who is also acting as Treasurer, is at Room 212, Pierce Hall, Harvard University, Oxford Street, Cambridge.

GENERAL INFORMATION

The School for Health Officers is conducted by Harvard University and the Massachusetts Institute of Technology, acting in coöperation, through an Administrative Board appointed for this purpose by both institutions.

The principal object of the School is to prepare young men for public health work and especially to fit them to occupy administrative and executive positions, as health officers, or members of boards of health, or secretaries, agents, or inspectors of health organizations. To this end, lectures, laboratory work, and other forms of instruction are offered by both institutions, and by special instructors from national, state, and local health agencies. The subjects embraced in the courses of study have been selected to cover a wide range, including medical, biological, hygienic, and engineering sciences, together with practical health administration.

It is recognized that the requirements for public health service are broad and complicated, and that the country needs leaders in every community fitted to guide and instruct the people in the art of hygienic living; qualified to direct the expenditure of energy, time, and money in public health work into fruitful channels; and able to initiate plans to meet novel conditions as they arise. It is the object of the School for Health Officers to provide the scientific ground work of sanitary knowledge which underlies efficient health administration.

The opportunities for the practical study of the arts of public sanitation offered to students of the School for Health Officers are exceptional. The city of Boston is an important port of entry for foreign and domestic shipping and for immigration, with thirty or more independent municipalities in its immediate vicinity, while the state of Massachusetts is a community which has long been recognized as standing in the forefront of American commonwealths in all aspects of the science and practice of public health. To the advantages of location are added the resources of Harvard University and the Massachusetts Institute of Technology.

REQUIREMENTS FOR ADMISSION

Graduates in Medicine of Harvard University and other recognized medical schools will be admitted to the School for Health Officers upon their records and registered as candidates for the Certificate of Public Health. Bachelors of Science in Biology and Public Health of the Massachusetts Institute of Technology [1] and other recognized institutions will likewise be admitted and registered as candidates for the certificate.

Masters of Civil Engineering of Harvard University [2] who have specialized in Sanitary Engineering and Bachelors of Science in Sanitary Engineering of the Massachusetts Institute of Technology and other recognized institutions, who lack the necessary preparation in medical and other sciences, will be admitted to the School upon their records, but will be required to spend at least one year in preparation before being accepted as candidates for the Certificate of Public Health.

Other graduates of colleges or technical or scientific schools will be admitted to the School without examination, provided their collegiate courses have included adequate instruction in physics, chemistry, biology, French and German; but as a rule they will be required to spend two or more years in preparation before being accepted as candidates for the Certificate of Public Health. Applications for admission to the School will be considered from those who have spent at least two years in a recognized college or technical or scientific school and have pursued satisfactory courses in physics, chemistry, biology, French and German, and also from persons of unusual experience or special qualifications; but as a rule such persons will be required to spend two or more years in preparation before being admitted as candidates for the certificate.

Special students not candidates for the Certificate of Public Health who desire to fit themselves for some special field will be admitted to the School, and may take any course or courses for which they are properly qualified, on approval of the Administrative Board.

While the medical degree is not a prerequisite for the Certificate of Public Health, candidates are advised to obtain the medical degree before specializing in public health work. Experience teaches that preferment for employment and advancement to the higher positions come more readily to those who have a medical degree.

[1] See p. 97 of the M. I. T. Catalogue, December, 1913.
[2] See p. 621 of the Harvard University Catalogue, 1913–14.

ADMISSION OF WOMEN

Women are admitted to the School for Health Officers on the same terms as men, and are equally eligible for the Certificate of Public Health. Women are admitted to many of the courses given in the Harvard Graduate School of Medicine, but not to undergraduate courses in the Harvard Medical School. If women require the latter courses they must be obtained elsewhere, preferably before entering the School for Health Officers.

APPLICATION AND REGISTRATION

Application for admission to the School should be made to the Director, and should be accompanied by a full statement of the applicant's qualifications, including his educational history and the studies which he desires to take, together with such certificates from other institutions as the Administrative Board may require.

Each student before being admitted to courses of instruction must register at the office of the Director and obtain a card, which must be presented to his instructors.

Students in the School for Health Officers will be regarded and registered as students both of Harvard University and the Massachusetts Institute of Technology.

SCHEDULE OF COURSES

No uniform curriculum will be required of candidates for the Certificate of Public Health, but each will be required to choose a schedule of courses to meet his individual needs. Assistance in making up this schedule of studies may be obtained from the members of the Administrative Board or the instructing staff. In general, the choice of studies must be such that the candidate on the completion of his Course will have covered in a broad way the subjects included in the varied duties of a public health officer.

To be entitled to the Certificate of Public Health, candidates must have satisfactorily completed courses in the following fundamental subjects: — anatomy, physiology, pathology, biological chemistry, sanitary biology, preventive medicine and hygiene, demography, and sanitary engineering. Inasmuch as the School is conducted and the certificate awarded by Harvard University and the Massachusetts Institute of Technology acting in coöperation, it is expected that candidates for the Certificate of Public Health will include in their schedule some courses in both institutions.

On or before the first day of the first term every candidate for the Certificate of Public Health must file with the Director a statement of his proposed schedule of courses in the School, which schedule to become effective must receive the approval of the Administrative Board.

The courses available in the School are not restricted to those stated in this catalogue but may include subjects in any department of Harvard University or the Massachusetts Institute of Technology, provided the work is in harmony with the objects of the School and meets with the approval of the instructor in charge of the course and of the Administrative Board. Certain special courses will be given by instructors not otherwise connected with either institution, and practical work may be taken in city, state, and national health departments and in the hospitals of Boston, but such work must receive special approval in each instance and be conducted under suitable restrictions.

Every candidate for the Certificate of Public Health will be required to complete satisfactorily each course taken by him and, on the completion of his approved schedule, to submit to a general oral examination by the Administrative Board. This examination may cover not only his work in the School but his previous studies and experience.

COURSES IN TROPICAL MEDICINE

Systematic courses in Tropical Medicine are offered at the Harvard School of Tropical Medicine under the direction of Professor Richard P. Strong. These courses have been included in this catalogue as they are open to properly qualified students in the School for Health Officers.

CERTIFICATE

The Certificate of Public Health (C. P. H.) will be granted to candidates who have satisfactorily completed the studies in their approved schedule, who have spent not less than one academic year in residence, and who have otherwise complied with all requirements. This certificate will be issued by Harvard University and the Massachusetts Institute of Technology.

FEES

The tuition fee for candidates for the Certificate of Public Health and for all other students pursuing regular courses in the School is $250 per year and must be paid in advance as follows: —$150 on or before the first day of the first term, and $100 on or before the first day of the second term. For one half of the school year the fee is $150.

Special students who do not pay the regular fee must pay a special fee for each course.

A deposit of $50 will be required to be made in advance against charges for breakage in the laboratories, and any balance remaining at the end of the year will be returned. There will be no extra laboratory fees for instruction taken in course.

All fees should be paid to Professor Whipple, who is acting as Treasurer of the School.

OFFICERS OF INSTRUCTION

HAROLD C. ERNST, M.D., *Professor of Bacteriology, Harvard University.*

WILLIAM T. SEDGWICK, PH.D., SC.D., *Professor of Biology and Public Health, Massachusetts Institute of Technology.*

THEOBALD SMITH, M.D., LL.D., S.D., *George Fabyan Professor of Comparative Pathology, Harvard University.*

DAVIS R. DEWEY, PH.D., LL.D., *Professor of Economics and Statistics, Massachusetts Institute of Technology.*

DWIGHT PORTER, PH.B., *Professor of Hydraulic Engineering, Massachusetts Institute of Technology.*

MILTON J. ROSENAU, M.D., *Professor of Preventive Medicine and Hygiene, Harvard University.*

FRANK B. MALLORY, M.D., *Associate Professor of Pathology, Harvard University.*

LANGDON FROTHINGHAM, M.D.V., *Instructor in Bacteriology, Harvard University.*

ROBERT P. BIGELOW, S.B., PH.D., *Assistant Professor of Zoölogy and Parasitology, Massachusetts Institute of Technology.*

WILLIAM M. WHEELER, PH.D., *Professor of Economic Entomology, Harvard University.*

MARK W. RICHARDSON, M.D., *Secretary, Massachusetts State Board of Health.*

GEORGE C. WHIPPLE, S.B., *Gordon McKay Professor of Sanitary Engineering, Harvard University.*

ROBERT S. WESTON, S.B., A.M., *Assistant Professor of Public Health Engineering, Massachusetts Institute of Technology.*

RICHARD P. STRONG, PH.D., M.D., *Professor of Tropical Medicine, Harvard University.*

SAMUEL C. PRESCOTT, S.B., *Associate Professor of Industrial Microbiology, Massachusetts Institute of Technology.*

FRANCIS H. SLACK, M.D., *Acting Director, Bacteriological Laboratory, Board of Health, Boston.*

S. BURT WOLBACH, M.D., *Assistant Professor of Bacteriology, Harvard University.*

ALPHEUS G. WOODMAN, S.B., *Assistant Professor of Food Analysis, Massachusetts Institute of Technology.*

PHILIP E. GARRISON, *Surgeon, U. S. Navy.*

EDWIN H. PLACE, M.D., *Assistant Professor of Pediatrics, Harvard University,* and *Physician-in-Chief, South Department, Boston City Hospital.*

SELSKAR M. GUNN, S.B., *Associate Professor of Sanitary Biology and Public Health, Massachusetts Institute of Technology.*

JOHN F. NORTON, PH.D., *Instructor in Chemistry of Sanitation, Massachusetts Institute of Technology.*

MELVILLE C. WHIPPLE, *Instructor in Sanitary Chemistry, Harvard University.*

JOHN W. M. BUNKER, PH.D., *Instructor in Sanitary Analysis, Harvard University.*

EUGENE C. HOWE, PH.D., *Instructor in Biology, Massachusetts Institute of Technology.*

ASSOCIATES

(*Alphabetically Arranged*)

HERMAN M. ADLER, *Assistant Professor of Psychiatry, Harvard University,* and *Chief of Staff, Psychopathic Hospital.*

THOMAS BARBOUR, PH.D., *Curator of Oceanica, and Associate Curator of Reptiles and Amphibians in the Museum of Comparative Zoölogy, Harvard University.*

EDWARD G. BIRGE, S.B., M.D., *Instructor in Preventive Medicine and Hygiene, Harvard University.*

CHARLES T. BRUES, S.M., *Assistant Professor of Economic Entomology, Harvard University.*

RICHARD C. CABOT, M.D., *Assistant Professor of Medicine, Harvard University.*

IDA CANNON, *Head Worker, Social Service Department, Massachusetts General Hospital.*

WALTER B. CANNON, A.M., M.D., *George Higginson Professor of Physiology, Harvard University.*

WILLIAM E. CASTLE, PH.D., *Professor of Zoölogy, Harvard University.*

CHARLES V. CHAPIN, M.D., S.D., *Superintendent, Board of Health, Providence, R. I.*

WILLIAM T. COUNCILMAN, M.D., A.M., LL.D., *Shattuck Professor of Pathological Anatomy, Harvard University.*

DAVID L. EDSALL, A.M., M.D., S.D., *Jackson Professor of Clinical Medicine, Harvard University.*

OTTO FOLIN, S.B., PH.D., *Hamilton Kuhn Professor of Biological Chemistry, Harvard University.*

FRANCIS B. GRINNELL, A.B., M.D., *Assistant in Preventive Medicine and Hygiene, Harvard University.*

LEWIS W. HACKETT, A.B., M.D., DR.P.H., *Instructor in Preventive Medicine and Hygiene, Harvard University.*

WILLIAM C. HANSON, M.D., *Assistant to the Secretary, Massachusetts State Board of Health.*

THOMAS F. HARRINGTON, M.D., *Director of the Department of School Hygiene of the City of Boston.*

JOHN B. HAWES, 2d, A.B., M.D., *Secretary, Board of Trustees, Massachusetts Hospital for Consumptives.*

ROBERT N. HOYT, S.B., *Lecturer on Public Health Administration, Massachusetts Institute of Technology.*

ROBERT W. LOVETT, A.B., M.D., *Assistant Professor of Orthopedic Surgery, Harvard University.*

THEODORE LYMAN, PH.D., *Assistant Professor of Physics, and Director of the Jefferson Physical Laboratory, Harvard University.*

HERMANN C. LYTHGOE, *Chief Analyst, Massachusetts State Board of Health.*

JOHN L. MORSE, A.M., M.D., *Associate Professor of Pediatrics, Harvard University.*

HARRIS P. MOSHER, M.D., *Instructor in Laryngology and in Anatomy, Harvard University,* and *Surgeon, Massachusetts Charitable Eye and Ear Infirmary.*

EDWARD H. NICHOLS, A.M., M.D., *Associate Professor of Surgery, Harvard University.*

WINTHROP J. V. OSTERHOUT, PH.D., *Professor of Botany, Harvard University.*

WILLIAM H. POTTER, D.M.D., *Professor of Operative Dentistry, Harvard University.*

M. VICTOR SAFFORD, *U. S. Public Health Service, Medical Inspector of Immigrants, Boston.*

ELMER E. SOUTHARD, M.D., A.M., *Bullard Professor of Neuropathology, Harvard University,* and *Director of the Psychopathic Department, Boston State Hospital.*

PERCY G. STILES, S.B., PH.D., *Instructor in Physiology and Personal Hygiene, Massachusetts Institute of Technology; Assistant Professor of Physiology and Hygiene, Simmons College; Instructor in Physiology, Harvard University.*

CARLON TEN BROECK, A.B., M.D., *Assistant in Comparative Pathology, Harvard University.*

HARVEY P. TOWLE, M.D., *Instructor in Dermatology, Harvard University.*

ERNEST E. TYZZER, M.D., *Assistant Professor of Pathology, Harvard University.*

FREDERICK H. VERHOEFF, A.M., M.D., *Instructor in Ophthalmic Pathology, Harvard University.*

EDMUND F. WALSH, M.D., *Assistant Physician, Carney Hospital.*

EUGENE WAMBAUGH, A.M., LL.B., LL.D., *Langdell Professor of Law, Harvard University.*

ROBERT DEC. WARD, A.M., *Professor of Climatology, Harvard University.*

LIST OF COURSES ARRANGED BY GROUPS

The courses listed as Regular Courses include those which extend over a half-year or more, and those which demand a considerable amount of time within a shorter period than a half-year. From these the student is expected to make his principal selections and in them he is expected to do his most serious work. In addition to these regular courses many special courses are open to members of the School.

Attention is called to the fact that some courses may be taken during the summer, thus making it possible for those who desire to do so to carry on their work continuously throughout the year.

REGULAR COURSES

Group I. Preventive Medicine

6 Courses

1. Principles of Sanitary Science and Public Health. Professors W. T. Sedgwick and S. M. Gunn 19
2. Preventive Medicine and Hygiene. Professor M. J. Rosenau, Dr. L. W. Hackett, Dr. E. S. Birge, and Dr. F. B. Grinnell 19
3. Public Health Problems. Professor S. M. Gunn 19
4. Epidemiology. Professor W. T. Sedgwick 19
5. Relation of Animal Diseases to the Public Health. Professor Theobald Smith and Dr. Carlon TenBroeck 20
9. Tropical Medicine. Professor R. P. Strong 21

Group II. Personal Hygiene

3 Courses

1. Personal Hygiene. Professor W. B. Cannon 22
2. Personal Hygiene. Professor P. G. Stiles 22
3. Industrial Hygiene and Sanitation. Professor S. M. Gunn . 23

Group III. Public Health Administration

6 Courses

1. Practical Health Administration. Dr. M. W. Richardson, Dr. W. C. Hanson, and Mr. H. C. Lythgoe 26
2. Sanitary Law. Professors W. T. Sedgwick, S. C. Prescott, R. S. Weston, and S. M. Gunn 26

6. Municipal Sanitation. Professor S. M. Gunn, Mr. R. N. Hoyt 27
7. Sanitation of Houses and Public Buildings. Professor S. M. Gunn 27
8. Public Health Administration. Professor S. M. Gunn and Mr. R. N. Hoyt 28
9. Hygiene of Ventilation and Heating Professor W. T. Sedgwick 28

Group IV. Sanitary Biology and Sanitary Chemistry

14 Courses

1. Protozoölogy. Professors Theobald Smith and E. E. Tyzzer 28
2. Entomology. Professor W. M. Wheeler and Asst. Professor C. T. Brues 28
3. Advanced Bacteriology. Dr. E. C. Howe 29
4. Bacteriology of Tropical Diseases. Professors H. C. Ernst and S. B. Wolbach, and Dr. Austin 29
5. Dairy Bacteriology. Professor S. C. Prescott 29
6. Bacteriology of Water and Sewage. Professor S. C. Prescott 30
7. Zoölogy and Parasitology. Professor R. P. Bigelow 30
8. Helminthology. Dr. Philip E. Garrison 30
11. Sanitary Biology. Dr. J. W. M. Bunker 31
12. Analysis of Water, Sewage, and Air. Dr. J. W. M. Bunker 31
13. Water and Air Analysis. Dr. J. F. Norton 32
14. Water Supplies and Waste Disposal. Dr. J. F. Norton . . 32
16. Food Analysis. Professor A. G. Woodman 32
17. Advanced Food Analysis. Professor A. G. Woodman . . . 33

Group V. Special Pathology

3 Courses

1. Comparative Pathology of Tropical Diseases. Professor Theobald Smith 33
2. Pathology of Tropical Diseases. Professor F. B. Mallory . . 33
3. Clinical Laboratory Work. Professors H. C. Ernst and S. B. Wolbach, and Dr. Austin 33

Group VI. Communicable Diseases

6 Courses

1. Communicable Diseases. Dr. E. H. Place 34
2. Communicable Diseases (Interneship at South Department, Boston City Hospital). Dr. E. H. Place 34

4. Biology of Infectious Diseases. Professor S. M. Gunn . . 35
5. Board of Health Diagnosis. Dr. F. H. Slack 36
6. Public Health Laboratory Methods. Professor S. M. Gunn and Associates 36
7. The Diagnosis of Rabies and Glanders by Laboratory Methods. Dr. Langdon Frothingham and Dr. E. F. Walsh 36

Group VII. Sanitary Engineering

11 Courses

1. Sanitary Engineering. Professor G. C. Whipple and Assistants 36
2. Sanitary Engineering — Summer Course. Professor G. C. Whipple and Assistants 37
3. Water Supply Engineering. Professor G. C. Whipple . . . 37
4. Sewerage Engineering. Professor G. C. Whipple 38
5. Limnology. Professor G. C. Whipple, Dr. J. W. M. Bunker, and Assistants 38
6. Sanitary Research Laboratory. Mr. M. C. Whipple 39
7. Rural Sanitation. Dr. J. W. M. Bunker 39
8. Hydraulic and Sanitary Engineering. Professor Dwight Porter 39
9. Advanced Hydraulic and Sanitary Engineering. Professor Dwight Porter 39
10. Engineering of Water and Sewage Purification. Professor Dwight Porter 40
11. Theory and Practice of Water and Sewage Purification. Professor R. S. Weston 40

Group VIII. Demography

3 Courses

1. Demography. Professor G. C. Whipple and Assistants . . 40
2. Sanitary Biometrics. Professor S. M. Gunn. (*Not given in 1914*) 40
3. Vital and Sanitary Statistics. Professor D. R. Dewey . . . 41

SPECIAL COURSES AND LECTURES

Group I. Preventive Medicine

4 Courses

6. Infant Mortality. Professor J. L. Morse 20
7. Genetics and Eugenics. Professor W. E. Castle 20
8. Social Service Work. Professor R. C. Cabot and Miss Ida Cannon 21
10. Tropical Dermatology. Professor R. P. Strong and Dr. H. P. Towle 21

Group II. Personal Hygiene

8 Courses

4. School Hygiene. Dr. T. F. Harrington 23
5. Mental Hygiene. Professor E. E. Southard and Associates . 23
6. Venereal Prophylaxis. Professor E. H. Nichols 24
7. Tropical Sunlight. Professor Theodore Lyman 24
8. Posture and Deformities. Professor R. W. Lovett 24
9. Ocular Hygiene. Dr. F. H. Verhoeff 25
10. Oral Prophylaxis. Professor W. H. Potter 25
11. Prevention of Diseases of the Ear. Dr. H. P. Mosher . . 25

Group III. Public Health Administration

3 Courses

3. Sanitary Law — Legal Powers of Health Officers. Professor Eugene Wambaugh 26
4. Medical Inspection of Immigrants. Dr. M. V. Safford . . 27
5. Municipal Sanitation. Dr. C. V. Chapin 27

Group IV. Sanitary Biology and Sanitary Chemistry

3 Courses

9. Venomous Animals. Dr. Thomas Barbour 30
10. Poisonous Plants of the Tropics. Professor W. J. V. Osterhout 31
15. Climatology. Professor R. DeC. Ward 32

Group VI. Communicable Diseases

1 Course

3. Tuberculosis. Dr. J. B. Hawes, 2d 34

Group IX. Medical and Other Sciences

The following courses at the Harvard Medical or Dental School are open to students registered in the School for Health Officers who fulfil the requirements set forth in the Dental or Medical School Catalogues, which may be obtained from the Director of the School for Health Officers: —

Anatomy, gross and microscopical.
Embryology.
Physiology.
Biological Chemistry.
Pathology.
Bacteriology.

The following courses at the Massachusetts Institute of Technology are likewise open to students of the School for Health Officers: —

1. General Bacteriology. Professor S. C. Prescott 41
2. General Physiology. Professor P. G. Stiles 41
3. Physiological Laboratory. Dr. E. C. Howe 41
4. Vertebrate Anatomy. Professor R. P. Bigelow 41

The following course in Harvard University is open to students of the School for Health Officers: —

5. Elementary Bacteriology. Dr. J. W. M. Bunker 42

DESCRIPTION OF COURSES*

Group I. Preventive Medicine

1. *Principles of Sanitary Science and Public Health.* (Course, M. I. T. 754.)

For Graduates and Undergraduates.

Given at 6 Lowell Building, Clarendon St., Boston. Wednesdays, 12–1 P.M.

Professors W. T. Sedgwick and S. M. Gunn.

One lecture weekly in the second half-year, illustrated by stereopticon, diagrams, and charts. First principles of health and disease, ancient and modern theories, parasitism, vital resistance, immunity, and preventive sanitation. The ground covered is essentially that in Sedgwick's "Principles of Sanitary Science and the Public Health."

2. *Preventive Medicine and Hygiene.*

For Graduates and Undergraduates.

Tuesday, Wednesday, and Thursday, from 2 to 3 P.M., second half-year.

Given at the Harvard Medical School, Lecture Room, Bldg. E.

Professor M. J. Rosenau, Dr. E. G. Birge, Dr. L. W. Hackett, Dr. F. B. Grinnell, and Assistants.

This is a general course, consisting of lectures and demonstrations, designed to give a bird's-eye view of the important facts and principles in preventive medicine. The subjects covered are those found in Rosenau's "Preventive Medicine and Hygiene."

3. *Public Health Problems.* (Course, M. I. T. 750.)

For Graduates and Undergraduates.

Given at 30 Trinity Place, Boston.

Professors W. T. Sedgwick and S. M. Gunn.

Twice a week in the first half-year and once a week in the second. Conferences on current problems in Hygiene and Sanitation, with discussions of the origin and trend of the underlying principles of Sanitary Science, Public Health, and Vital Statistics. Preparation required, M. I. T. Courses 720, 721, 730, and 731.

4. *Epidemiology.* (Course, M. I. T. 751.)

For Graduates only.

Given at 30 Trinity Place, Boston.

Professor W. T. Sedgwick.

*Tabular Views, showing the hours of subjects at the Institute of Technology, may be obtained at the office of the Institute, 491 Boylston St., Boston, one week before the beginning of each term.

One hour weekly in the first half-year, devoted to a detailed consideration of the natural history of epidemics, especially typhoid fever, tuberculosis, scarlet fever, etc., in reference to public water supplies, milk supplies, and similar causative factors; the intention being to enable the student by a critical consideration of instructive examples to prepare himself for the interpretation of corresponding cases arising in public health practice. Preparation required, M. I. T. Courses 730, 750, 753, and 754.

5. *Relation of Animal Diseases to the Public Health.*
For students registered in the School for Health Officers.
Tuesday and Friday, from 5 to 6 P.M., April 3, 7, 10, 14, 17, 28, May 1 and 5.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Professor THEOBALD SMITH and Dr. CARLON TEN BROECK.

Certain infectious and parasitic diseases of domestic animals which are transmissible to man (anthrax, glanders, tuberculosis, meat poisoning, trichinosis, etc.), and which are met by the health officer in the examination of live animals and in the inspection of meats, milk, and other animal products. These diseases will be discussed with the aid of charts, pathological preparations and cultures.

6. *Infant Mortality.*
For students registered in the School for Health Officers.
Thursdays, from 5 to 6 P.M., February 5, 12, 19, 26.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Professor JOHN LOVETT MORSE.

These lectures will take up the statistics of infant mortality, the social, economic, and medical problems involved, the causes, and methods of prevention, the means at present in use to combat infant mortality, and the possibilities for their extension in the future. An opportunity will be given to study the work actually being done in this direction in Boston at present.

7. *Genetics and Eugenics.*
For students registered in the School for Health Officers.
Monday, Wednesday, and Friday, from 9 to 10 A.M., second half-year.
Given in the Zoölogical Lecture Room, Harvard University, Cambridge.
Professor W. E. CASTLE.

The reproduction of animals, the origin of new races; the influence of heredity and of environment; applications to animal breeding and human society.

8. *Social Service Work in its Relation to the Work of the Public Health Officer.*

For students registered in the School for Health Officers.

First exercise given at the Harvard Medical School, 5 to 6 P.M., Monday.

Three exercises given at the Massachusetts General Hospital, Blossom St., Boston, 11 A.M., Mondays.

Dr. RICHARD C. CABOT, and Miss IDA CANNON.

Four exercises will be devoted to this subject. The first exercise will outline, in a general way, the scope of the work. In the others the records of patients, illustrating problems in industrial disease, contagious disease, and nervous and mental troubles, and chronic illnesses, will be studied. The course will also include actual demonstrations of social service work.

9. *General Course in Tropical Medicine.*

(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)

Monday, Wednesday, and Friday, from 11.30 A.M. to 1 P.M., December, January, February, and March, 1 to 15.

Given at the Harvard Medical School.

Professor RICHARD P. STRONG.

This course will include lectures, laboratory, and bedside demonstrations, with particular reference to the following diseases: — Dysenteries, psilosis, dengue fever, yellow fever, beriberi, epidemic dropsy, pellagra, leprosy, cholera, malta fever, typhus, plague, yaws, verruga peruviana, malaria, blackwater fever, sleeping sickness, kala azar and infantile leishmaniasis, African tick fever, tsutsugamushi disease, liver abscess, filariasis including dracontiasis, uncinariasis, bilharzia and katayama disease, endemic haemoptysis and the psychoses commonly encountered in tropical countries. In connection with this course, when material is available, clinical demonstrations and lectures, with particular reference to the surgical treatment of liver abscess, elephantiasis, splenomegaly and bilharziosis, will be given by the Surgical Department of the Medical School.

10. *Tropical Dermatology.*

(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)

Friday, from 11.30 A.M. to 1 P.M., March 15 to 31; Tuesday, Thursday, and Saturday, from 11.30 A.M. to 12.30 P.M., April.

Given at the the Harvard Medical School.

Professor RICHARD P. STRONG and Dr. H. P. TOWLE.

This course will include the study of the lesions of the skin, with particular reference to the following diseases and conditions: — Pemphigus, contagiosus, the various epidermaphyton and trichophyton infections common in the tropics, pinta disease, blastomycoses, cutaneous and subcutaneous myiasis, cermatophiliasis, oriental sore, tropical sloughing, phagedaena, velct sore, ulcerating granuloma, yaws, verruga peruviana, leprosy, madura foot, pellagra, craw-craw, leucoderma, prickly heat, ground itch, and guinea-worm infection.

Group II. Personal Hygiene

1. *Personal Hygiene.*
For students registered in the School for Health Officers.
Thursday and Friday from 5 to 6 P.M., February 27, March 5, 6, 12, 13, 19.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Professor W. B. Cannon.

The topics covered are as follows: —

1. *Exercise.* Physiological elements involved. Effects of exercise on circulation, respiration, excretion, temperature, digestion, metabolism, and structure. Results of exercise favorable to health. Injurious effects of exercise.

2. *Fatigue.* Seats of fatigue. Nature of fatigue — probable causes. Effects of various conditions on fatigue.

3. *Rest.* Relation to activity. Natural periods of rest. Differerences in bodily needs in rest and activity. Metabolism. Uses of rest.

4. *Bathing.* Varieties of baths. Physiological effects of various baths. Times of bathing, in relation to exercise, sleep, and eating.

5. *Clothing.* Uses of clothing. Importance of texture in different conditions. Texture of clothing materials. Selection of clothing for various purposes.

6. *Diet.* Bodily demands for nourishment. Considerations regarding choice of food.

2. *Personal Hygiene.* (Course, M. I. T. 723.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor P. G. Stiles.

Lectures once a week during the second half-year. Designed to give an accurate idea of the operation and care of the human mechanism. Preparation required, M. I. T. Courses 720 and 721.

3. *Industrial Hygiene and Sanitation.* (Course, M. I. T. 752.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor S. M. Gunn.

Twice a week in the first half-year. The prejudicial effects of factory life upon health, including occupational accidents, industrial poisonings, etc. Preparation required, M. I. T. Course 750 taken simultaneously.

4. *School Hygiene.*
For students registered in the School for Health Officers.
Monday, from 5 to 6 P.M., February 2, 9, 16.
Given at the Harvard Medical School.
Dr. Thomas F. Harrington, Director of Department of School Hygiene of the City of Boston.

A course of three lectures as follows: —

I. *School Hygiene.* The problem one of preventive medicine. The Organization and Administration of a Department of School Hygiene.

II. *Medical Supervision of Schools.* The physician; the nurse; the teacher; school and home. Medical examination vs. medical inspection. Exclusions and readmissions. Special schools and special classes.

III. *Hygiene of Instruction.* The curriculum and the child. The teaching of physiology and hygiene. Personal hygiene. Physical education. Athletics — playgrounds.

In addition to these three lectures, opportunity will be offered the students to visit the schools to see the conditions and practical methods employed, and to study the special schools.

5. *Mental Hygiene.*
For students registered in the School for Health Officers.
Monday, from 5 to 6 P.M., April 6, 13, 27, May 4, 11, 18.
Given in the Assembly Room of the Psychopathic Hospital, 74 Fenwood Road, Boston.
Dr. E. E. Southard, Professor of Neuropathology, Harvard Medical School, and Director of the Psychopathic Department, Boston State Hospital, and Associates.

A course of six lectures and demonstrations as follows: —

1. Grounds of Optimism in the Prophylaxis of Mental Disease. Professor E. E. Southard.

2. The Relation of Syphilis to Mental and Nervous Disease. Dr. A. Myerson, Pathologist to Taunton State Hospital.

3. Alcoholism and Mental Disease. Asst. Professor H. M. Adler, Chief-of-Staff, Psychopathic Hospital.

4. Eugenics and Mental Hygiene. Asst. Professor Robert M. Yerkes, Psychologist to the Psychopathic Hospital.

5. Mental Tests of Value to Health Officers. Dr. V. V. Anderson, Assistant Physician, Out-Patient Department, Psychopathic Hospital.

6. Conditions of Social Service among Psychopaths. Miss M. C. Jarret, Director of Social Service, Psychopathic Hospital.

6. *Venereal Prophylaxis.*
For students registered in the School for Health Officers.
Wednesday, from 5 to 6 P.M., March 18.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Dr. E. H. Nichols.
One lecture.

7. *Tropical Sunlight.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Tuesdays, 5 to 6 P.M., Feb. 10, 17, 24.
Given at the Harvard Medical School.
Professor Theodore Lyman.
A course of three lectures will be given.

8. *Posture and the Prevention of Deformities.*
For students registered in the School for Health Officers.
Tuesday, 4 P.M., November 4, 11, 18, 25.
Given at the Children's Hospital.
Dr. R. W. Lovett.
A course of four exercises, consisting of lectures and clinical demonstrations. The subjects considered will be: —

Mechanics of correct and incorrect posture — center of gravity of the body. Conditions promoting correct posture. Conditions promoting incorrect posture. Influence of incorrect posture on the general condition (in children — in adults). Antero-posterior defects in posture (round shoulders, hollow back). Lateral defects in posture (lateral curvature, postural and structural). Relation of school life to lateral curvature of the spine (school furniture). Treatment of all forms of incorrect posture (school treatment, home treatment, treatment by physicians). Flat foot and weak ankles.

9. *Ocular Hygiene.*
For students registered in the School for Health Officers.
Monday and Wednesday, from 5 to 6 P.M., March 2, 4.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Dr. F. H. VERHOEFF.

This course will consist of two lectures as follows: —

1. Elementary optical principles. Tests for visual acuity. Tests for strabismus. Effects of eye-strain. School myopia. Illumination of school rooms. Paper and type for school books.

2. Diseases of the eye with which the health officer should be acquainted. Ophthalmia neonatorum, gonorrhoeal conjunctivitis in adults, phlyctenular conjunctivitis and keratitis, trachoma, epidemic conjunctivitis, diphtheritic conjunctivitis, toxic amblyopia from wood alcohol, etc. Relation of heredity and consanguinity to diseases of the eye.

10. *Oral Prophylaxis.*
For students registered in the School for Health Officers.
Monday and Wednesday, from 5 to 6 P.M., March 9, 11, 16.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Dr. WILLIAM H. POTTER.

This course will consider the causes and prevention of certain diseases and irregularities of the teeth, and will include a discussion of school inspection and dental infirmaries.

11. *Prevention of Diseases of the Ear.*
For students registered in the School for Health Officers.
Days to be arranged with Instructor. October.
1st exercise, 5 to 7 P.M., Harvard Medical School, Bldg. B, Room 103.
2d exercise, 9.30 to 10.30 A.M., Massachusetts Charitable Eye and Ear Infirmary.
3d exercise, 9.30 to 10.30 A.M., Massachusetts Charitable Eye and Ear Infirmary.
Dr. HARRIS P. MOSHER.

1. The relation between the upper air passages and the ears. Demonstration of the anatomy of the nose, the vault of the pharynx, and the pharynx, the Eustachian tube, the fossa of Rosemuller, the middle ear, the mastoid process, and the lateral sinus.

2. The disturbances of the function of the Eustachian tube due to alterations in the nose, in the vault, and in the pharynx. Diseases of the middle ear due to infection from the post-nasal space. Enlarged or infected tonsils and adenoids. Acute infectious diseases as a cause of middle ear disease. Otitis media suppurative acuta. Acute mastoiditis. Thrombosis of the lateral sinus. Infection of the meninges. Brain abscess.

3. Otitis media suppurative chronica. Caries of the ossicles. Cholesteatoma. Tuberculosis of the middle ear and mastoid process. Syphilis. Labyrinthitis.

Group III. Health Administration

1. *Practical Health Administration.*
For students registered in the School for Health Officers.
October, all day; Tuesday and Thursday in May, all day.
Introductory lecture given at the Harvard Medical School; other exercises at various places to be announced.
Dr. Mark W. Richardson, Secretary, Massachusetts State Board of Health; Dr. W. C. Hanson, and Mr. H. C. Lythgoe.

This course is largely of a practical nature and includes the following topics: —

The State Administration of: Water supply and sewerage; food and drugs; state inspectors of health; cold storage; slaughtering; milk; rendering plants; water companies; sanatoria; prisons; police stations.

The Local Administration of: Nuisances; vital statistics; quarantine; milk; food; stables; hospitals and dispensaries.

The Administrative Control of Diseases Dangerous to the Public Health as: Actinomycosis; anterior poliomyelitis; asiatic cholera; cerebrospinal meningitis, diphtheria; glanders; leprosy; malignant pustule; measles; ophthalmia neonatorum; scarlet fever; smallpox; tetanus; trachoma; trichinosis; tuberculosis; typhoid fever; typhus fever; varicella; whooping cough; yellow fever.

2. *Sanitary Law.* (Course, M. I. T. 762.)
For Graduates and students of the School for Health Officers.
Given at 30 Trinity Place, Boston.
Professors W. T. Sedgwick, S. C. Prescott, R. S. Weston, and S. M. Gunn.

One lecture weekly in the second half-year. Preparation required, M. I. T. Courses 750, 753, 754.

3. *Sanitary Law — Legal Powers of Health Officers.*
For students registered in the School for Health Officers.
Wednesdays, from 5 to 6 P.M., February 4, 11, 18, and 25.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Professor Eugene Wambaugh.

This is a course of four lectures and will cover the powers and responsibilities of health officers from the point of view of the law.

4. *Medical Inspection of Immigrants.*
For students registered in the School for Health Officers.
Monday, from 5 to 6 P.M., March 23. Time for practical exercises to be arranged with the Instructor.

The lecture will be given at the Harvard Medical School, Amphitheatre of Bldg. E; the practical exercises at the steamship wharves.
Dr. M. V. SAFFORD.

This course will consist of a lecture, followed by practical exercises, to enable the students to observe the methods used in a large port of entrance in the medical inspection of immigrants. Dr. SAFFORD'S office is at the U. S. Immigration Station, Long Wharf, Tel. No. Main 380 or Main 381. Arrangements should be made with Dr. SAFFORD for the practical exercises.

5. *Municipal Sanitation.*
For students registered in the School for Health Officers.
Thursdays and Fridays, 5 to 6 P.M., March 20, 27; April 2, 9, 16, 30.
Given at the Harvard Medical School, Amphitheatre, Bldg. E.
Dr. CHARLES V. CHAPIN, Superintendent of Health, Providence, R. I.

This course consists of six lectures: —

1. Science and sanitation.
2. Efficiency of public health measures.
3. Organization of the health department.
4. Research and publicity.
5. Nuisance problems.
6. Contagious disease problems.

6. *Municipal Sanitation.* (Course, M. I. T. 753.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor S. M. GUNN and Mr. R. N. HOYT.

Four hours a week in the second half-year. Detailed consideration of the principles of water supply, sewage, and garbage disposal, air, milk and meat supply, disinfection and other work of municipal Boards of Health. Preparation required, M. I. T. Course 750.

7. *Sanitation of Houses and Public Buildings.* (Course, M. I. T. 758.)
For Graduates and students of the School for Health Officers.
Given at 30 Trinity Place, Boston.
Professor S. M. GUNN.

One hour a week in the second half-year. A study of the sanitary aspects of the housing problem as found in American cities today. Preparation required, M. I. T. Courses 750, 754, and 755.

8. *Public Health Administration.* (Course, M. I. T. 763.)
For Graduates only.
Given at 30 Trinity Place, Boston.
Professor S. M. Gunn and Mr. R. N. Hoyt.

Lectures once a week in the second half-year. Preparation required, M. I. T. Courses 750, 753, and 754.

9. *Hygiene of Ventilation and Heating.* (Course, M. I. T. 755.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor W. T. Sedgwick.

Lectures and reports once a week in the first half-year. The regulation of the body temperature, the sources and remedies of discomfort due to bad air, overheating, overcrowding, etc., in private rooms and public halls.

Group IV. Sanitary Biology and Sanitary Chemistry

1. *Protozoölogy.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Daily in November, from 9 A.M. to 12.30 P.M.; Tuesday, Thursday, and Saturday in December, from 9 A.M. to 12.30 P.M.
Given at the Harvard Medical School.
Professors Theobald Smith and E. E. Tyzzer.

The course in Protozoölogy will include a general discussion of the morphology and life history of the more important human protozoan parasites, such as the amoebae, flagellata, sporozoa, and ciliata. Their relations to their definite and to intermediate hosts will also be discussed, together with phenomena of immunity. Methods for the cultivation of certain parasites and suitable procedures for collecting, staining, and mounting will be discussed.

2. *Entomology.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Monday, Tuesday, Wednesday, Thursday, and Friday, 2 to 4 P.M., February; Monday, Wednesday, and Friday, 2 to 4 P.M., March.
Given at the Harvard Medical School.
Professor William M. Wheeler and Assistant Professor C. T. Brues.

This course will consist of a few general lectures on the structure and classification of the Arthropoda, followed by a more detailed account of the Arthropoda known to be concerned and likely to be concerned in

the transmission of human and animal diseases or in the infliction of local injuries and physiological disturbances.

Laboratory work and demonstrations will also constitute an important feature of the course and will provide for training in the dissection of insects, in the principal methods of studying their life histories and habits, and in their identification by means of dichotomic tables and from technical descriptions. The student will be provided with a list of most useful monographs and reference books on blood-sucking and disease-disseminating arthropoda and should acquire an extensive acquaintance with this literature.

The following orders, families and genera will be considered: —

1. Insecta, with particular reference to the diptera, suctoria, siphunculata, hemiptera, hymenoptera, and lepidoptera.
2. Myriopoda, including the scolopendridae.
3. Arachnida, including the scorpionidea, araneina, and acari.

3. *Advanced Bacteriology.* (Course, M. I. T. 734.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Dr. E. C. Howe.

Three hours weekly in the first half-year. Preparation required, M. I. T. Course 730.

4. *Bacteriology of Tropical Diseases.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Monday, Tuesday, Wednesday, Thursday, and Friday, from 2 to 5 P.M., January; Tuesday, Thursday, and Saturday, from 9 A.M. to 12.30 P.M., February.
Given at the Harvard Medical School.
Professors Harold C. Ernst and S. B. Wolbach, and Dr. Austin.

This course will include the identification of the etiological factor and the diagnosis of the infection by laboratory methods, such as cultures, serum reactions, and the inoculation of animals, particularly in the following diseases: Malta fever, relapsing fever, African tick fever, yaws, plague, cholera, bacterial dysentery, leprosy, glanders, mycetoma, and blastomycosis. The course is open only to those with a thorough training in bacteriological technique.

5. *Dairy Bacteriology.* (Course, M. I. T. 736.)
For Graduates and students of the School for Health Officers.
Given at 30 Trinity Place, Boston.
Professor S. C. Prescott.

Four hours weekly in the first term. Chiefly laboratory work. Preparation required, M. I. T. Courses 732, 733, 736, and 753.

6. *Bacteriology of Water and Sewage.* (Course, M. I. T. 731.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor S. C. PRESCOTT.

Given in the first half-year and repeated in the second. Two hours a week. An extension of the course in General Bacteriology, with application to Sanitary Chemistry and Sanitary Engineering. Preparation required, M. I. T. Course 730.

7. *Zoölogy and Parasitology.* (Course, M. I. T. 713.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor R. P. BIGELOW.

Two hours weekly in second half-year. Lectures and demonstrations with special reference to animal parasites, and their relation to diseases in man and the domestic animals. Preparation required, M. I. T. Course 704 (Invertebrate Zoölogy).

8. *Helminthology.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Tuesdays and Thursdays in December, 2 to 5 P.M.; Tuesdays, Thursdays, and Saturdays, in January, 9 A.M. to 12 M.
Given at the Harvard Medical School.
Dr. PHILIP E. GARRISON, Surgeon, United States Navy.

The course in Helminthology will include the differentiation and classification of species and instruction in collecting, preserving, staining, and mounting of the parasites and their ova, and the cultivation of the parasites when possible. The human cestodes, tremadoes, and nematodes will be considered in detail. Certain species of the acanthocephala, the pentastomida and hirudinea will also be discussed.

9. *Venomous Animals.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Monday, Wednesday, and Friday, from 10 to 11 A.M., March, and 11.30 A.M. to 12.30 P.M., April.
Given at the Zoölogical Museum, Room 15, Cambridge.
Dr. THOMAS BARBOUR, Curator of Oceanica, and Associate Curator of Reptiles and Amphibians in the Museum of Comparative Zoölogy, Harvard University.

In this course the poisonous snakes, reptiles, scorpion, fish, coelenterates and amphibians will be demonstrated. The poisonous effects produced by them and the methods of treatment also will be considered.

10. *Poisonous Plants of the Tropics.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Tuesday and Thursday, from 2 to 3 P.M.; Saturday, from 10 A.M. to 12 M., March.
Given at the Harvard Medical School.
Professor W. J. V. OSTERHOUT.

This course will consist of lectures and demonstrations on the more important poisonous plants of the tropics and the effects produced by them.

11. *Sanitary Biology.* (Harvard University, Course H20*f*.)
For students of the School of Engineering, the School for Health Officers, and others suitably qualified.
Hours by special arrangement.
Given at Pierce Hall, Oxford Street, Cambridge.
Dr. JOHN W. M. BUNKER.

This course is open to students who have taken Engineering C9*L* and Engineering C19*f* and to others suitably qualified.

This course is intended for students who wish to follow up the biological aspects of limnological and sanitary science. The work will consist of original investigations in the microbiology of water. There are many possible lines of investigation concerning the relation between micro-organisms, food supply, temperature, and dissolved gases, information upon which will constitute a valuable contribution to sanitary science.

12. *Analysis of Water, Sewage and Air.* (Harvard University, Engineering C19*f*.)
For students in the School for Health Officers and other properly qualified graduate students in the Harvard Medical School and Harvard University.
Hours to be arranged. 18 hours a week. First half-year.
Given at Pierce Hall, Oxford Street, Cambridge.
Dr. J. W. M. BUNKER.

This is a comprehensive course in the physical, chemical, microscopical, and bacteriological analysis of water, sewage, and air, and covers the subject in a detailed manner. It is intended for those who wish to obtain a working knowledge of water and sewage analysis sufficient to enable them to secure positions in this field of work.

A general knowledge of the principles of qualitative and quantitative analysis is prerequisite.

13. *Water and Air Analysis.* (Course, M. I. T. 520.)
For Graduates and Undergraduates.
Given at 525 Boylston Street (Room 36), Boston.
Dr. J. F. NORTON.

Three hours weekly in the first half-year. A course in Sanitary Chemistry. Preparation required, M. I. T. Course 512 (Quantitative Analysis).

14. *Water Supplies and Waste Disposal.* (Course, M. I. T. 522.)
For Graduates and Undergraduates.
Given at 525 Boylston Street (Room 36), Boston.
Dr. J. F. NORTON.

One lecture and two laboratory hours weekly on the chemical problems of water supply, water purification, and the disposal and purification of wastes. Preparation required, M. I. T. Course 520.

15. *Climatology.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Monday, Wednesday, and Friday, from 10 to 11 A.M., April.
Given at Cambridge.
Professor ROBERT DECOURCY WARD.

This course will include a discussion of climate in general. The elements of climate; temperature; moisture; wind; pressure; evaporation; composition of the atmosphere. The methods of recording and the hygienic importance of these elements. Controls of climate; latitude; land and water (continental and marine climates); altitude (mountain climates); exposure; prevailing winds; ocean currents; mountain barriers; soil; vegetation. Classification of climates. Characteristics of tropical climates (trade wind deserts; mountain climates; monsoon climates, etc.). Acclimatization and hygiene of the white race in the tropics. The climatologist's view of the relations between climate and disease. The life of man in the tropics, as controlled by tropical climates.

16. *Food Analysis.* (Course, M. I. T. 525.)
For Graduates and Undergraduates.
Given at 525 Boylston Street (Room 36), Boston.
Professor A. G. WOODMAN.

Seven lectures and thirty-eight hours of laboratory work in the first or second half-year. Dealing with the character, purity, and nutritive value of common food materials and food adulteration. Preparation required, M. I. T. Course 512 (Quantitative Analysis).

17. *Advanced Food Analysis.* (Course, M. I. T. 526.)
For Graduates and Undergraduates.
Given at 525 Boylston Street (Room 36), Boston.
Professor A. G. Woodman.

Five hours a week of laboratory work and class-room exercises in the first half-year. Methods of attacking chemical problems arising under state and municipal food control. Food inspection and criticism of methods of food analysis. Preparation required, M. I. T. Course 525.

Group V. Special Pathology

1. *Comparative Pathology of Tropical Diseases.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Tuesday and Friday, from 4 to 5 P.M., February and March.
Given at the Harvard Medical School.
Professor Theobald Smith.

This course will consist of a discussion of the etiology, pathology, and immunology of the more important infectious and parasitic diseases of domestic animals prevalent in the tropics (piroplasmoses, trypanosomiasis, rinderpest, etc.). The preparation of smallpox vaccine for the tropics will also be dealt with.

2. *Pathology of Tropical Diseases.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Daily in November, from 2 to 5 P.M.; Monday, Wednesday, and Friday, from 2 to 5 P.M., December.
Given at the Harvard Medical School.
Professor F. B. Mallory.

This course will include the study of the macroscopic and histological lesions in the following diseases: — Beriberi, pellagra, malaria, trypanosomiasis, kala azar, African tick fever, yellow fever, blackwater fever, plague, malta fever, cholera, dysentery, liver abscess, sprue, leprosy, yaws, verruga peruviana, ulcerating granuloma, oriental sore, tropical ulcers, gangosa, trematodal infection of the lungs and liver, filarial infection, uncinariasis, elephantiasis, and mycetoma.

3. *Clinical Laboratory Work.*
(Offered by the School of Tropical Medicine, and open to students registered in the School for Health Officers.)
Tuesday and Thursday, from 9 A.M. to 12 M., March; Monday, Tuesday, Wednesday, Thursday, and Friday, from 2 to 5 P.M., April.
Given at the Harvard Medical School.
Professors H. C. Ernst and S. B. Wolbach, and Dr. Austin.

This course will be practical and will cover methods of obtaining and the technique of examination of materials from tropical affections where a diagnosis may be made or aided by the microscope. Material, including blood, sputum, urine, feces, and fluids obtained by aspiration, and from lesions of the skin, will be used; — as far as possible from human cases and experimentally infected animals. Particular attention will be paid to the following diseases: — Malaria and blackwater fever, trypanosomiasis, sleeping sickness, kala azar and oriental sore, dengue fever, dysentery, liver abscess, leprosy, yaws, schistosomiasis, paragonomiasis, guinea worm, filarial and other mematodoal infections.

Group VI. Communicable Diseases

1. *Communicable Diseases — Clinical Course.*

For qualified students registered in the School for Health Officers.

Afternoons during January, 2 to 5 o'clock.

Given at the South Department, Boston City Hospital, 745 Massachusetts Avenue.

Dr. Edwin H. Place, Clinical Instructor in Pediatrics, Harvard Medical School, and Physician-in-Chief, South Department, Boston City Hospital.

This course offers an opportunity for the study of the more common contagious diseases, more especially measles, scarlet fever, diphtheria, whooping cough, etc. Their recognition, variation, complications, manner of spread and treatment will be studied at the bedside and in short conferences after the ward visits. The results of treatment and management will be considered both from series of cases in the wards, and from the incidence and mortality in the city as a whole.

2. *Communicable Diseases. — Interneship.*

For qualified students registered in the School for Health Officers.

One to four months, as arranged by agreement.

South Department, Boston City Hospital, 745 Massachusetts Ave.

Open to a limited number of specially qualified students, by arrangement with Dr. E. H. Place.

3. *Tuberculosis.*

For students registered in the School for Health Officers.

Monday and Wednesday, November 3, 5, 10, 12, 17, 19, 5 to 6 p.m.

Given at the Harvard Medical School.

Dr. John B. Hawes, 2d, Secretary, Board of Trustees, Massachusetts Hospital for Consumptives.

The course will consist of six exercises, in which the following points relating to this disease and methods of control and administration will

be taken up. Opportunity will be given for those taking this course to become acquainted with the practical workings of the State organization; visits will be made to tuberculosis dispensaries, municipal tuberculosis hospitals, and State hospitals and sanatoria.

1. General survey of the tuberculosis problem in Massachusetts. Methods of computing the total number of cases and the number of cases needing treatment in any community. Progress made during the last twenty-five years.

2. Survey of the more important laws relating to tuberculosis and the different problems connected with these laws. Survey of the methods adopted by Massachusetts in controlling tuberculosis.

(*a*) Educational, including large travelling exhibits, small portable exhibits, school exhibits, the use of the public press, moving pictures, and lectures, practical methods of arousing popular interest in tuberculosis in any given community.

(*b*) Statistical, including the reporting and recording of cases.

(*c*) Laboratory diagnosis; free sputum examinations.

(*d*) Institutional control.

3. State institutions for consumptives.

Under this heading will be given a description of the Massachusetts State Sanatoria, methods of administration, admission of patients, and problems connected with the same.

4. Tuberculosis in cities and towns. The municipal control of the disease. In this lecture the tuberculosis problem in the large city, the smaller cities and towns, and the rural districts will be considered.

5. Tuberculosis and the medical profession. Early diagnosis; reporting of cases; coöperation between health officers and local boards of health and the medical profession; coöperation between health officers, voluntary tuberculosis associations, and the medical profession; need of education among doctors as well as the laity.

6. Tuberculosis in schools. The problem of fresh air rooms and outdoor schools. Tuberculosis in factories and work-shops. Tuberculosis in milk. Need of coöperation of all forces.

4. *Biology of Infectious Diseases.* (Course, M. I. T. 735.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor S. M. Gunn.

Two hours a week in the first half-year in the biological characteristics of trichinosis, typhoid fever, tuberculosis, Asiatic cholera and some other infectious diseases of special interest to the sanitarian. Preparation required, M. I. T. Courses 720 and 730.

5. *Board of Health Diagnosis.*
For students registered in the School for Health Officers.
Dates are to be arranged for personally with the Instructor.
Given at the Bacteriological Laboratory, 30 Huntington Avenue, Boston.
Dr. F. H. Slack.

This course will enable small groups of students to observe the routine work of a bacteriological laboratory, and, if properly qualified, to participate in it.

6. *Public Health Laboratory Methods.* (Course, M. I. T. 736.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor S. M. Gunn and Associates.

Three hours a week in the second term upon methods for cultural diagnosis of diphtheria, tuberculosis, the Widal reaction, and microscopical work upon malaria, etc. Preparation required, M. I. T. Course 730.

7. *The Diagnosis of Rabies and Glanders by Laboratory Methods.*
For qualified students with proper technical training.
At time to be arranged with Dr. Langdon Frothingham.
Given at the Harvard Medical School.
Dr. Langdon Frothingham and Dr. E. F. Walsh.

This course is only for those qualified, and includes the diagnosis of rabies in dogs and other animals, and the diagnosis of glanders from suspected lesions by cultures and animal inoculations. The complement fixation tests for glanders and epizoötic abortion will also be demonstrated.

Group VII. Sanitary Engineering

1. *Sanitary Engineering.* (Harvard University, Government 31.)
For students registered in the School for Health Officers, and for Harvard Graduates and Undergraduates specializing in Government and Business Administration.
Monday, Wednesday, Friday, at 11 A.M., second half-year. Half-course.
Given at Pierce Hall, Oxford Street, Cambridge.
Professor Whipple and Assistants.

This course will deal with the underlying principles of sanitary engineering and municipal sanitation. The topics considered will include public water supplies and water purification, the pollution of

streams, methods of sewage disposal, garbage disposal, street cleaning, hygienic housing, plumbing, ventilation, the effect of insanitary conditions on the public health. Attention will be given to the operation, cost, and efficiency of works rather than to construction, but important works in America and in Europe will be described.

There will be two lectures a week and one class exercise devoted to recitations and reports upon assigned topics.

A general knowledge of physics and chemistry is required of students in this course, as well as a reading knowledge of French and German.

2. *Sanitary Engineering — Summer Course.* (Harvard University, Engineering 9*K*.)

Primarily for registered students in the Harvard School of Engineering, but open to students in the School for Health Officers, and to other properly qualified students.

Given at Pierce Hall, Oxford Street, Cambridge, during the summer session, June 22 to August 1, 1914.

Professor WHIPPLE and Assistants.

This course is introductory to the special courses in Water Supply and Sewerage Engineering. The underlying principles of municipal sanitation and public hygiene are taken up and discussed with special reference to engineering works. The field covered is shown by the following partial list of topics: — public water supplies and water purification; rainfall and run-off from watersheds; storage of water; stream pollution; sewerage and sewage disposal; garbage disposal; street cleaning; disposal of trade wastes; plumbing; ventilation; public health; vital statistics; applications of biology and chemistry.

Students taking this course are expected to give their entire time to it during the six weeks of the summer session. The instruction consists of lectures, exercises in the laboratory and drafting room, and visits to sanitary works in the vicinity of Cambridge. Prerequisites for this course are physics, general chemistry, and hydraulics.

3. *Water Supply Engineering.* (Harvard University, Engineering C19*d*.)

For advanced students in the School of Engineering, but open to registered students in the School for Health Officers.

Eighteen hours per week. Second half-year. Full course.

Hours arranged by agreement.

Given at Pierce Hall, Oxford Street, Cambridge.

Professor WHIPPLE.

This is an advanced course in the practical application of engineering principles to water works design and is intended especially for those

who intend to engage in this branch of engineering. Attention is given to the design, construction, and operation of water purification plants, including sand filters and mechanical filters. The instruction is largely individual and special problems are assigned to each student.

A knowledge of hydraulics and mechanics is required of all students entering this course, and ordinarily students are not admitted unless they have previously taken the course in sanitary engineering (9*K*). If desired, this course may be taken in connection with the course in sewerage engineering (C19*e*).

4. *Sewerage Engineering.* (Harvard University, Engineering C19*e*.)
For advanced students in the School of Engineering, but open to registered students in the School for Health Officers.
Eighteen hours per week. Second half-year. Full course.
Hours arranged by agreement.
Given at Pierce Hall, Oxford Street, Cambridge.
Professor WHIPPLE.

This is an advanced course in the practical application of engineering principles to the design and operation of sewerage systems and sewage disposal works, including screening, sedimentation, septic action, intermittent sand filtration, contact filters, trickling filters, and sludge disposal. It is intended especially for those who intend to engage in this branch of engineering. The instruction is largely individual and special problems are assigned to each student.

A knowledge of hydraulics and mechanics is required of all students entering this course, and ordinarily students are not admitted unless they have previously taken the course in sanitary engineering (9*K*). If desired, this course may be taken in connection with the course in water supply engineering (C19*d*).

5. *Limnology.* (Harvard University, Engineering C9*L*.)
For students of the School of Engineering who intend to specialize in sanitary engineering, but open to registered students in the School for Health Officers, and other properly qualified persons.
Given during the late summer session at Squam Lake. Time required is about two weeks, August 10–22, 1914.
Professor WHIPPLE, Dr. BUNKER, and Assistants.

This is a special research course, covering the physics, biology, and chemistry of lakes and reservoirs, and the general subject of the effect of storage on the quality of water. A special feature of the work is a study of the growth of algae and other microscopic organisms. Among the topics considered are soundings, current, wave action, seiches,

thermal stratification, chemical and biological effects of stagnation, dissolved gases, microscopical examination of water, control of algae in reservoirs.

6. *Sanitary Research Laboratory.* (Harvard University, Engineering C20*d*.)

For students who have taken the course in water and sewage analysis (Engineering C19*f*), but other qualified students will be admitted.

Hours arranged by agreement. Second half-year.

Given at Pierce Hall, Oxford Street, Cambridge.

Mr. M. C. Whipple.

This course is intended for students who desire to specialize in sanitary work. It includes special studies in some branch of sanitary engineering and the preparation of a thesis. Opportunities are available for investigating various matters in connection with water purification, sewage treatment, corrosion of metals, disposal of factory wastes, air washing, etc.

7. *Rural Sanitation.* (Harvard University, Course H9*P*.)

For students registered in the School for Health Officers, and to other properly qualified graduate students in Harvard University.

Wednesday and Friday, at 12 M. Second half-year.

Given at Pierce Hall, Oxford Street, Cambridge, Mass.

Dr. J. W. M. Bunker.

This course deals with the principles of sanitation and hygiene as applied on the farm, at the summer resort, and at laborers' camps. Among the topics discussed are small water supplies and sewage disposal installations, sanitation of barns and milk farms, swamp drainage, the mosquito problem, the fly problem, etc.

8. *Hydraulic and Sanitary Engineering.* (Course, M. I. T. 175.)

For Graduates and Undergraduates.

Given at 18 Trinity Place (Eng. A), Boston.

Professor Dwight Porter.

Three exercises weekly in the first half-year (see M. I. T. Programme, p. 187). Preparation required, M. I. T. Course 162 (Theoretical Hydraulics).

9. *Advanced Hydraulic and Sanitary Engineering.* (Course, M. I. T. 176.)

For Graduates and Undergraduates.

Given at 18 Trinity Place (Eng. A), Boston.

Professor Dwight Porter.

Three hours weekly in the second half-year. A continuation of the previous course, which is required as preparation.

10. *Engineering of Water and Sewage Purification.* (Course, M. I. T. 181.)
For Graduates only.
Given at 18 Trinity Place (Eng. A), Boston.
Professor DWIGHT PORTER.
Eight hours weekly in the first half-year. An advanced course. Preparation required, M. I. T. Course 176.

11. *Theory and Practice of Water and Sewage Purification.* (Course, M. I. T. 760.)
For Graduates only.
Given at 30 Trinity Place, Boston.
Professor R. S. WESTON and Assistants.
Two hours a week throughout the year. Preparation required, M. I. T. Courses 731, 753, 754.

GROUP VIII. DEMOGRAPHY

1. *Demography.* (Harvard University, Course H9*N*.)
For students registered in the School for Health Officers, also to graduate students in the School of Engineering and the School of Business Administration of Harvard University.
Monday, Wednesday, Friday, at 9. Second half-year. Half-course.
Given at Pierce Hall, Oxford Street, Cambridge.
Professor G. C. WHIPPLE and Assistants.
This is a course in vital, social, and sanitary statistics arranged especially for students who intend to enter the public health service. It will treat of the principles of statistics, population, registration, births and marriages, general death rates, corrected death rates, specific death rates, morbidity, causes of death, preparation of tables, plotting, construction of diagrams, graphical display of data, and, in general, the application of statistics to the public health service.
There will be two lectures a week, and one class exercise for recitation and reports upon assigned problems.

2. *Sanitary Biometrics.* (Course, M. I. T. 761.)
For Graduates only. (*Not given in 1914.*)
Given at 30 Trinity Place, Boston.
Professor S. M. GUNN.
The principles of modern biometrics and their application to various problems in Sanitary Science. Preparation required, M. I. T. Course 750 and Vital Statistics.

3. *Vital and Sanitary Statistics.* (Course, M. I. T.)
For Graduates and Undergraduates.
Given at 491 Boylston Street (Room 40), Boston.
Professor D. R. Dewey.

Two hours weekly in the first half-year. The collection of vital statistics, the consideration of errors, and the analysis of mortality and morbidity reports, with special reference to determining the health of communities. (Preparation required in Political Economy.)

Group IX. Medical and Other Sciences

1. *General Bacteriology.* (Course, M. I. T. 730.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor S. C. Prescott.

Given in the first half-year and repeated in the second. Five hours a week. A general survey of the bacteria and their behavior. A prerequisite for all M. I. T. work upon sewage disposal, water supply, and other public health problems. Preparation required in physics and chemistry.

2. *General Physiology.* (Course, M. I. T. 720.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor P. G. Stiles.

Six hours weekly in second half-year. Lectures and recitations upon the general principles of the physiology of protoplasm, with special emphasis upon cellular physiology. To be taken simultaneously with 721 (Physiological Laboratory).

3. *Physiological Laboratory.* (Course, M. I. T. 721.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Dr. E. C. Howe.

Three hours weekly in the second half-year. An introduction to and accompanying General Physiology, M. I. T. 720. Preparation required in physics and chemistry.

4. *Vertebrate Anatomy.* (Course M.I.T. 710.)
For Graduates and Undergraduates.
Given at 30 Trinity Place, Boston.
Professor R. P. Bigelow.

Four hours a week, first term, third year. This course deals with the principles of vertebrate anatomy.

5. *Elementary Bacteriology.* (Course H9Q).
For Graduate and Undergraduate Students.
Half-course.
Given at Pierce Hall, Oxford Street, Cambridge, Mass.
Dr. JOHN W. M. BUNKER.

This is a course for students who have never studied bacteriology, but who wish to obtain a general understanding of the relation of bacteria to the processes of nature, to chemistry, sanitary science, and the public health. The subject-matter of the course will include the technique of isolation and identification of species, the examination of soil, water, and foods; bacteria in the industries; communicable diseases, diagnosis and methods of prevention; fermentation, sewage treatment, sludge disposal, and water purification.

This course will require nine hours per week, three of lectures to be arranged by agreement, and about six of laboratory, which can be put in partly at odd hours; consecutive hours are not desirable.

CANDIDATES FOR THE CERTIFICATE IN PUBLIC HEALTH (C.P.H.) 1913–14

Boyd, Mark Frederick, M.D., S.M. . . 111 Fenwood Road, Boston

M.D. (*University of Iowa*) 1911, M.S. (*ibid.*) 1913.
Bacteriologist, Laboratory, Iowa State Board of Health, 1911–12.
Health Officer and City Bacteriologist, Oskaloosa, Ia., 1912–13.
State Dairy and Food Inspector for Oskaloosa, Ia., 1912–13.
Charles Follen Folsom Teaching Fellow in Hygiene, Department of Preventive Medicine and Hygiene, Harvard Medical School.

Champion, Merrill Edwin, A.B., M.D. 827 Mass. Ave., Arlington

A.B. (*Harvard University*) 1902, M.D. (*ibid.*) 1906.
Medical Superintendent, Florence Crittenton Maternity Home, Watertown, Mass., 1908–10.
Bacteriologist, Symmes Hospital, Arlington, 1912–.
Junior Physician, Symmes Hospital, Arlington, 1912–.
Bacteriologist, Board of Health, Arlington, 1913–.

Harmon, Gaius Elijah, M.B., M.D. . . . . .Randolph

M.B. (*Boston University*) 1908, M.D. (*ibid.*) 1909.
House Officer, State Sanatorium, Rutland, Mass., 1909.
House Officer, Newton (Mass.) Hospital, 1909–10.
Pathologist, State Hospital for the Insane, Norwich, Conn., 1910–12.
Graduate student, Department of Biology and Public Health, Massachusetts Institute of Technology, 1912–13.

Holt, William Leland, A.B., M.D. 96 Westbourne Road, Forest Hills

A.B. (*Harvard University*) 1901, M.D. (*ibid.*) 1905.
Austin Teaching Fellow in Comparative Pathology, Harvard Medical School, 1905–06.
Graduate student, University of Freiburg, Germany, 1907, 1910–13.
In practice, 1908–10.

Neagle, Harry Benjamin, A.B., M.D. . . 33 Algonquin St., Dorchester

A.B. (*Bowdoin College*) 1899, M.D. (*Johns Hopkins University*) 1903.
Assistant, Loomis Sanatorium, 1903–04.
Associate Physician, Loomis Sanatorium, 1904–08.

OTHER REGULAR STUDENTS

Allen, Andrew Foster, S.B. . . . 25 West Chestnut St., Campello
S.B. in Sanitary Engineering (*Massachusetts Institute of Technology*) 1912.
Laboratory Assistant and Watershed Inspector, etc., Water Department, Hartford, Conn., 1912–13.

Brown, William Eustis, Ph.B.. . . . .46 Westland Ave., Boston
Ph.B. (*Lafayette College*) 1909.
Private teaching, 1909–12.
Law student, Columbia University, 1912–13.

Platt, Philip Skinner, A.B., A.M. . . . .62 Brattle St., Cambridge
A.B. (*Yale University*) 1912, A.M. (*ibid.*) 1913.
Graduate student, Department of Biology and Public Health, Massachusetts Institute of Technology, 1912–13.

CIRCULAR OF THE SCHOOL FOR HEALTH OFFICERS

HARVARD UNIVERSITY AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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